Space Weather Forecast

Issued on Thursday 17 October 2024 at 13:03 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Ongoing chance of Moderate class flares. Chance of G1 Minor Geomagnetic Storms days 1-2 (17-18 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with four Moderate class flares observed through the period, peaking at 16/0323 UTC.

There are currently seven active regions on the visible disc, with an as yet unnumbered region forming in the southeast. AR3852 and AR3854 in the southwest quadrant are the most prominent spot groups on the disc, being responsible for the majority of flare activity. AR3856 in the northwest near centre disk, has seen the most notable change in recent hours, continuing to increase in both size and complexity with an increasingly complex magnetic structure. The remaining regions appear magnetically simpler, and generally stable.

No Earth-directed CMEs (coronal mass ejections) have been observed in available imagery, although we await further imagery and analysis.

Solar Wind / Geomagnetic Activity: Solar wind speeds were slightly elevated on a slowly declining trend, reaching around 410km/s by the end of the period. The Interplanetary Magnetic Field (IMF), Bt, briefly moderate to start, became weak. The important Bz component varied weakly throughout. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) were at background, with no Solar Radiation Storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity expected with further isolated Moderate flares thought likely, with a very slight chance of an isolated Strong flare.

Solar Wind / Geomagnetic Activity: No Earth directed CMEs feature in the forecast. Ongoing slightly elevated solar winds are expected to gradually ease during day 1 (17 Oct). There is then the potential for elevated winds to develop from late day 1 until day 3 (17-19 Oct), due to a potential fast solar wind development.

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Met Office Space Weather Forecast

Overall generally Quiet to Unsettled (Kp 2-3) conditions are expected, with Active (Kp 4) intervals likely and a chance of G1/Minor storms (Kp 5) later on day 1 (17 Oct) or into day 2 (18 Oct).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is due to remain at background, with no Solar Radiation Storms expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	30	30	10	10
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	60	60	60	60
Very Active	**R3-R5 (X Class)**	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	10	10	10
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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